2.6 Establish Time the Launch Site Crosses the Orbital Plane (Continued)

Ω_{et} = longitude of the prime meridian relative to T at the time the launch site crosses the orbital plane.

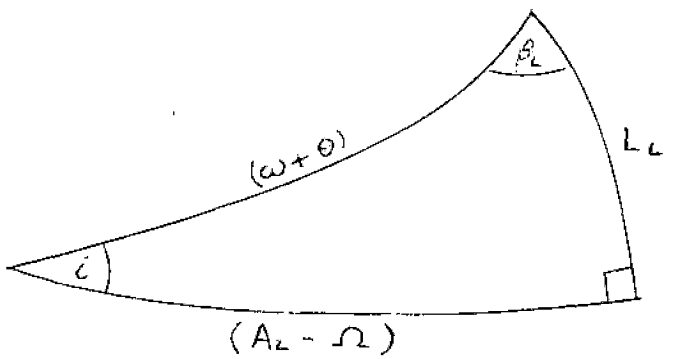
$\Omega_{et} = A_L - A_L$ by inspection.

The geocentric latitude, L, may be obtained from the geodetic latitude, L', by means of

$$\tan L = (1-f)^2 \tan L' \qquad (2\text{-}6\text{-}1)$$

$$f = \frac{1}{298.24}$$

The spherical triangle of interest shows the launch site at the instant of intersection with the plane of motion.



$$\sin(A_L-\Omega) = \tan L_L \tan (90-i) \rightarrow (A_L-\Omega)$$

$$= \sin^{-1}\left(\frac{\tan L_L}{\tan i}\right)$$

(Note that the inclination must be equal to or greater than the latitude for the procedure to work.)